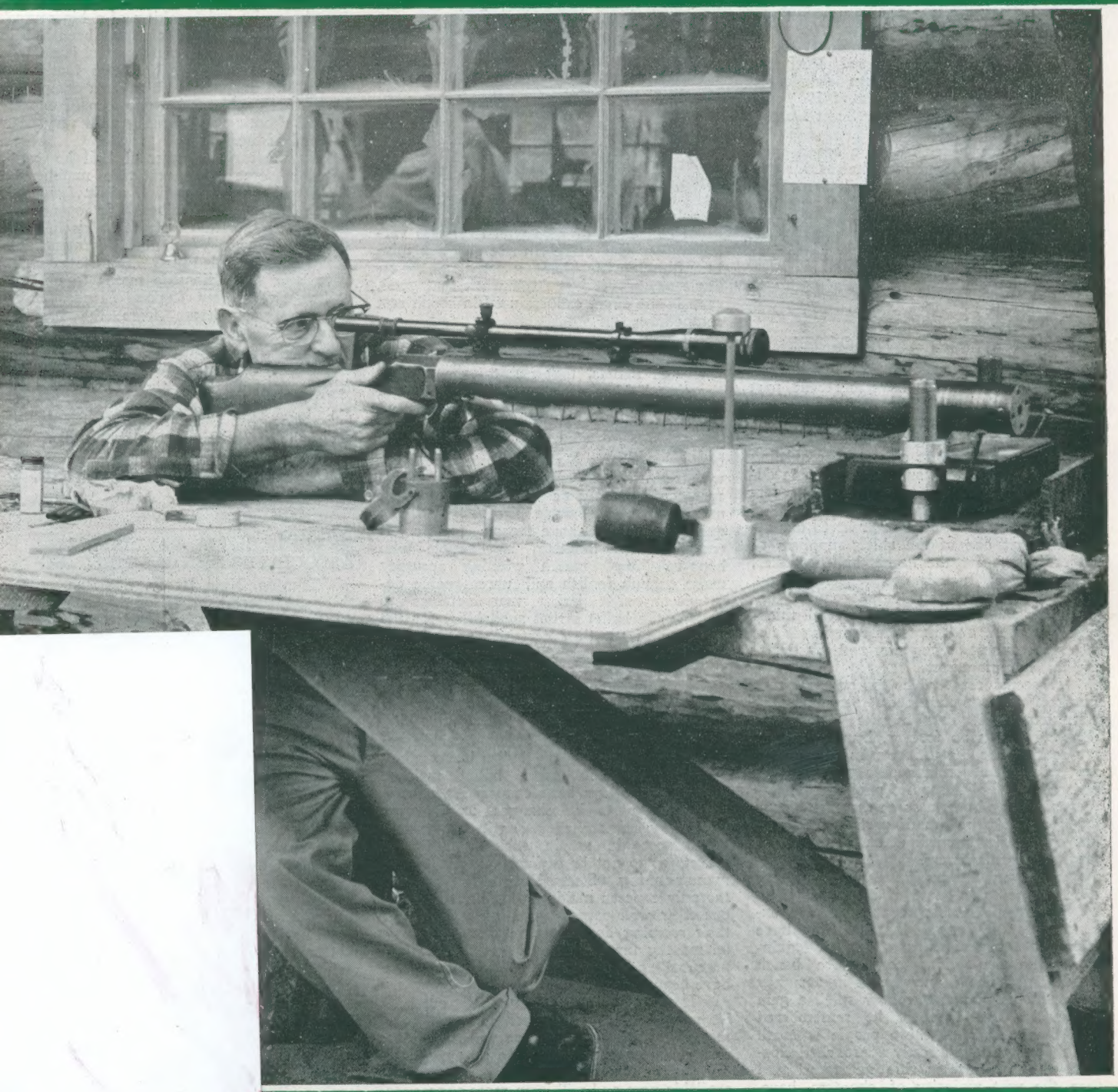
January 1962
Vol. 6, No. 9
35 cents

Precision SHOOTING



a magazine for Shooters by Shooters

Precision Shooting is published monthly by Precision Shooting, Inc.

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Subscription rates:—To the U. S., Canada and Mexico, 1 year $4.00, 2 years $7.00, 3 years $9.00. All other countries $1.00 per year additional.

Change of address requires 30 days' notice.

Place of Publication—Cowles Press, Inc., 83 Eastern Ave., St. Johnsbury, Vermont. Second-class postage paid at St. Johnsbury, Vt.

COVER PHOTO

Mr. Carl Fuller, one of California's leading black powder rifle shooters, firing one of his bench rest rifles in front of his son's gun shop on the Kenai Peninsula, Alaska, about 130 miles from Anchorage. Mr. Fuller spent the summer of 1961 with his son. Photo was made by Scott Donaldson, Anchorage, Alaska.

The heavy bench rifle is a breech-muzzle loader, chambered for the .416 Rigby case. The .45 caliber lead bullet, made of type metal for the base half and pure lead for the upper half, is loaded from the muzzle, using the false muzzle and bullet starter. The rifle, with this type of bullet and loading from the muzzle, is a very accurate one.

P. H. T.

DON'T KILL THE GOOSE!

Suppliers of custom rifle barrels and jacketed bullet die sets have in recent past years been through rashes of impractical and unreasonable demands from enthusiastic but wishful thinking shooters which have plagued those suppliers close to the quitting point. It seems that such unreasonable demands have not stopped entirely, but perhaps have dropped to a bearable point.

It has recently been brought to our attention that one of the chief suppliers of bullet jackets for the home bullet maker, Sierra Bullets, Inc., is now experiencing a similar impractical and unreasonable demand for bullet jackets of "zero" wall thickness variation, and that these demands are reaching a point of plaguing and exasperating this manufacturer.

It seems reasonable to suspect that many of these "perfectionist" demands may come from individuals in the bench rest shooting clan who forever, by any means, are seeking for the ultimate in rifle accuracy, which is a commendable goal in itself. It is admitted that reports published in this magazine may have in some measure helped bring on these rashes of perhaps desirable but entirely impractical demands that have plagued manufacturers.

However, the published reports have been of the experiences of individuals who by their own efforts and at their own expense have found means by which they have improved the performance of **their equipment.** To the serious competitive bench rest shooter, any improvement in accuracy is worthwhile, no matter how small a gain it may be. But it must be remembered that the number of those people is small and that they have already approached closer to the "ultimate in rifle accuracy" goal than the vast majority of shooters have. Those people have gained their superiority by their own efforts and at their own expense—they haven't asked or expected "George" to do it for them, as some wishful-thinkers have done and will do.

People, shooters included, must understand that in the manufacture of any product in quantity by machinery, some permissible variation tolerances in manufacture must be accepted. When evidence of demand for any product in some quantity is established there will be competition among manufacturers to supply that demand. That competition pretty much assures minimum **practical** manufacturing tolerances to maintain a quality at competitive price to gain and hold a fair share of the trade potential.

Bullet jackets are a product that must be machine made in large quantities in order to be available to we home bullet makers at a price we think we can afford, so, we must expect and accept some variation tolerances in them.

It is this writer's firm opinion, based on considerable experience, that the very small variations in wall thickness of the bullet jackets that are available to home bullet makers today are for most of us but one of the minor variables that affect the accuracy we get at the target.

The top ranking competitive bench rest shooters, who must be perfectionists, can and no doubt will continue to gauge their bullet jacket wall thickness and segregate those with minimum variation for making the bullets they will use in match shooting. But don't anyone think that by using bullets made in jackets of zero wall thickness variation they can make a three-quarters minute-of-angle rifle shoot quarter minute-of-angle groups—it just don't work that good, even in the small calibers used in bench rest competition.

I would suspect that the majority of us who have added home bullet making (jacketed bullets, that is) to our over-all shooting hobby are not shooting rifles of bench rest match winning accuracy. I think a growing number of us are home-making jacketed bullets in the larger calibers and shooting them in sporter rifles. If with our rifles in calibers over 6m/m we succeed in getting or closely approaching minute-of-angle **average** accuracy we are quite happy—and have reason to be. If enough wishful-thinking, lazy people who hope to "buy" match winning accuracy make enough foolish and unreasonable demands on bullet jacket manufacturers to foul up the bullet jacket availability for the majority of us, they certainly are not going to win any plaudits from us. Even though our efforts may be rather mediocre, we get wholesome pleasure and satisfaction from our hobby and we don't want it fouled up.

Sierra Bullets Inc. have gained an enviable reputation for the bullet jackets they make available to home bullet makers. They have always been cooperative to reasonable requests for changes or improvements (at least so believed) when they have been able to do so in such quantities of jackets as to not be a direct money loss in manufacturing. Sierra Bullets Inc. are not the only concern making good bullet jackets but their well earned good reputation and their seeming dominance in that field may be making them a chief target for the impractical and unreasonable demands that have been reported.

It might be smart for us to let our bullet manufacturers, whatever company they may be, know that while we will always be wanting something better, we do appreciate the quality of the jackets they are making available now and will even more appreciate any improvements it may be practical to make in the future. A postal card or short note would take but a bit of time and might balance some of the plaguing requests, to our benefit.

P. H. T.

COLONEL TOWNSEND WHELEN

Immortal rest has come to the Dean of American Riflemen. Colonel Townsend Whelen, U. S. A. Retired, died the morning of December 23rd at his home in St. Louis, Missouri. He was buried with full military honors in Arlington National Cemetery December 29th.

The renown of Colonel Whelen's long lifetime of service to his fellow-riflemen is such that no review seems necessary for American riflemen. For more than half a century this true gentleman and sportsman has through his published writing, personal correspondence and person-to-person, given without stint from his fund of shooting knowledge to aid countless riflemen in improving their marksmanship and thus more satisfaction from their sport.

What may not be so generally known is that in the later years of his life, following the accidental breaking of a hip several years ago, Colonel Whelen has been handicapped to the use of crutches and has never been free from physical pain in that time. In spite of this, and with never a complaint, he carried on his active program of experimental shooting and writing until very near the end of life.

In the early summer of 1961 he competed in some bench rest rifle matches at the Bench Rest Rifle Club of St. Louis, of which he was a member. He spent the months of July and August at his beloved summer home in Woodstock, Vermont, and while there attended the nearby State Smallbore Rifle Championship match to observe and visit with New England friends. Even after returning home from the hospital November 30th he wrote an article on the .243 for GUNS & AMMO magazine.

The sympathy of the man's host of friends goes forth to the bereaved family but they may take some comfort in the knowledge that Colonel Whelen has joined the ranks of Shootingdom's Immortals.

EXPERIMENTAL BALLISTICS ASSOCIATES ANNUAL MEETING

Trenton, New Jersey, was the scene, this past December 2nd, of the first annual meeting of members of Experimental Ballistics Associates. In less than a year since that first exploratory conclave in Stanfordville, N. Y., where the prospects for bringing together existing groups and drawing in others of the serious experimenters were explored, this idea of constructive association of men active in ballistic experimentation has taken hold. What, less than 350 days before, had been seven men in two states putting their efforts to common advantage, their number now is twenty-five, in twelve states, each with a contribution to make. In an area where idea and initiative are paramount, where reason, ability, and facilities are essential, this is a remarkable assemblage, representing a geographical and interest cross section of the country.

The six men able to be present here met to assess and consolidate their position, and they found it good. In fact the consensus of opinion of those present was to view membership as secondary to the production of worthwhile data. It was decided to concentrate on expanding project activity and improving communications, and to avoid a numerical build-up beyond present levels. Current projects to improve range facilities were given top priority.

The meeting agenda was mainly concerned with those topics that have grown

out of an expanding effort. It was agreed that this sort of research work thrives best with a minimum of organization. The idea of electing officers or setting up a leadership with position titles was rejected in favor of a continuing association. The writer was asked to continue to coordinate the activity of the group and to serve as a point of contact. Formal dues were also rejected, and for the time being members will be expected to mail their own data to all members of the group on their own. (Where this is, for some reason, impossible, a means of handling it will be found.) Should some future development indicate the need for change in this policy, another method of meeting expenses can be developed. It seems foolish to require an arbitrary dues contribution for an undefined expense.

The group agreed that a formal presentation of report data was needed. The exact form of this was referred to R. J. Ceremsak for further study. The format of recent reports was taken as a basic outline. A system of numbering and identifying such contributions will be established. Means of duplication will also be a subject for a special committee study when the need arises.

The stimulation of projects is always a difficult topic. Too many ideas lie latent awaiting the spark of inspiration to set them afire and the urge of initiative to set them in motion. To avow and to define our plans may help to stir them forward into activity. It was decided to let Chris Helbig survey what each man has near the fire. He will also ask for a list of equipment available for experimental work. This questionnaire is not to see who can do what for us, but to assess our own capacities. It can help in deciding how to tackle particular test projects. A tabulation of this data may prove useful in furthering research by indicating new paths or old ones worth retracing.

It became clear, in discussing our purposes, that we all feel that the major benefit is the pooling of talent and intelligence for our common good. One problem possibly arising from this attitude was: how to make data available on a sufficiently wide scale to reach those who should be included, without making it such common knowledge as to be of no value. Since, of course, all true knowledge must finally be published, no real solution to this proprietary dilemma was found. A committee will consider if any action should be taken against possible exploitation of group work.

Three other items were placed on a study list to be dealt with by committee groups, as needed:

1. Development of future plans for E. B. A.
2. Review experimental projects for leads to further study.
3. Implementation of the E. B. A. idea.

Area meetings, such as this one, are obviously limited in attendance by factors of date and distance. To draw in a larger group of distant associates, it was recognized that a more general focus is required. Quite a few of our number attend the N. R. A. annual meetings, and this represents a common point of interest. It was, therefore, decided to change our annual meeting, so that each year that Washington, D. C., is the site of the N. R. A. meeting, to hold ours there during that event. Comment on this will be welcomed. Our purpose is to make it possible at minimum added expense for individuals to meet face to face from time to time.

Those who were pioneers in this cooperative exchange of data are indeed satisfied with the progress of E. B. A. The surveys of project plans and facilities to be carried out in the next year will help to define our course. The establishment of uniform procedures and common standards of investigation will contribute to progress. Any who engage actively in the exacting work of ballistic experimentation are welcome, indeed are asked, to get in touch with us. In general, however, the year ahead is expected to be one of consolidation rather than uncritical expansion.

Experimental Ballistics Associates may be addressed at: 110 Kensington Ave., Trenton, N. J., E M. Yard, the writer, who has agreed to coordinate the activities of the group. Information about project activity and any pertinent data should be sent there. Those who seriously consider firearms testing with modern equipment, and wanting the truth in test results, should get in touch with their fellows already well along in this game.

For an activity that is as unrewarding except in the realization of truth, it is heartening to find so many aboard. In the very nature of this sort of undertaking, those in it are a dedicated, determined, and developing lot.

Ten test data bulletins have been issued to all associates at the date of mailing during the past year:

CCI Magnum Pistol Primers vs. Other Large Pistol Primers.
Comparative Test of Berdan and Boxer Primers
.30 U. S. Carbine Load Data
.22 Jet Magnum Chronograph Test (two independent)
Circuit for Measuring Three Velocities Simultaneously
Smith & Wesson Model 53 Revolver Test Report
Velocity Loss with Shorter .357 Magnum

(Continued on Page Four)

Ballistics Associates

(Continued from Page Three)

Hornet vs. K-Hornet Performance
Chronograph Tests of .270 Ackley Long Magnum, 6.5x55 MM, and 6MM—.244

In addition three field clinics with the chronograph have been held. Considerable information on circuits, tools, and test techniques have been exchanged without the formality of bulletins. Some of this data has been printed in PS for the benefit of all its readers. Other such articles are pending and planned for general distribution via PS. Two major studies currently await publication by larger gun magazines. E. B. A. will continue to make its work known to shooters generally to the extent it has enough popular appeal to satisfy the editors who print it. Ambitious and far reaching projects are in the works, and the build-up of abilities and facilities continues at a steady pace.

Edward M. Yard

TOURNAMENT CIRCUIT

NEW YORK CITY SMALLBORE MATCHES

At the first Metropolitan Rifle League 100 yard indoor match of the season in Brooklyn in November, R Triggs won the individual match with a 400-35, to be followed by L. Norton 400-32, K. Stannard 400-30, Carl Johnson 400-29 and D. Rosenblatt 400-29.

The Pennsylvania team of Roy Oster and H. Swarts, Jr. won the two man team match with the only possible score, 800-59x. They were followed by Irwin and Sam Tekulsky with 799-57, P. Addeo and V. Gyomber 799-56 and Lloyd and Barbara Norton with 799-54.

Individual aggregate winners were K. Stannard 800-59, Lloyd Norton 800-59, Carl Johnson 800-56 and H. Swarts, Jr. 800-54. Sam Burkhalter had the phenomenal score of 799 with 72 x's, this on a target some 12% smaller than official NRA targets.

At the "Double Individual & Aggregate Match" on December 17th, Sam Burkhalter made a clean sweep, winning both fired 40 shot matches (400-36 and 400-34) for the winning 800-70x score. (That man Sam sure is smacking the X-ring—Ed.) Walter Tomsen had runner-up aggregate of 800-63x and Irwin Tekulsky was third with 800-58x.

Sam Tekulsky and Rans Triggs each dropped a point in the first 40 shot match but came through with 2nd and 3rd place 400's in the second match to take 4th and 5th spots in the aggregate with 799-64 for Sam and 799-60 for Rans.

A total of 55 fired in these matches.

LOW COST BULLET MAKING DIES

For the past several weeks I have been testing the jacketed rifle bullet die sets made by SHOOTERS ACCESSORY SUPPLY, Box 250 North Bend, Oregon, and sold at unusually low prices for this type of equipment. I have used the die sets in three calibers, .22, .25 and .30, and have made enough bullets in each caliber to feel that I can give a fair evaluation of this equipment.

No doubt many who have seen this equipment advertised have felt that it could not be very satisfactory and sold at such low cost. I was a little dubious myself. But knowing the practical worth of low cost shooters' accessories that Ted Smith of Shooters Accessory Supplies has turned out in the past, and having at least one report of the very satisfactory accuracy obtained with bullets made in this equipment, I wanted to try the sets myself. Ted Smith has been very cooperative in making this possible. I am glad that I have been able to test this equipment and happy that I can make the following report on it.

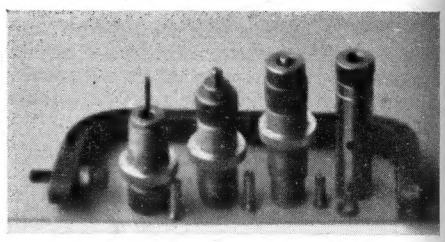
The first sets I received were in .22 and .25 caliber. They were complete sets; the basic core seating die, bullet swaging (forming) die and punch-holder ram for the press to be used with, which sells for $14.90; plus the extrusion core forming die (squirt die) and the special ejection frame, each of which costs an additional $7.50—a total of $29.90 for the complete outfit.

I know from past experience that quite satisfactory bullets for most purposes can be made by simply seating the cut lead-wire slugs in the jackets and then swaging. However, I am convinced by experience that lead cores preformed in a squirt die are a necessity if one wishes to consistently make the best possible bullets in any equipment. Preforming cores in a squirt die assures cores of very uniform weight and eliminates the tedious, time consuming chore of weighing, whittling or filing the cut lead slugs to get that uniform weight. Further and even more important, preforming the cores in a squirt die assures uniform density of the cores and eliminates the possibility of air pockets between core and jacket to result in an unbalanced bullet, to some degree. The squirt die for bullet uniformity and quality, and the ejection frame for convenience of operation, are well worth their additional cost to complete one of these bullet making kits.

Let it be understood at the start that the Shooters Accessory Supply bullet making equipment does not equal the over-all quality of the better known, custom made, much higher cost equipment that is available. The custom made equipment requires long hours of hand work to attain the superb finish, the extremely small tolerances and precise fitting of parts, and hand work does cost money. The SAS equipment is production made and reasonable manufacturing tolerances must be expected and accepted. But let it be equally understood that very excellent bullets can be made in the SAS equipment, when common-sense and reasonable care in its operation is exercised.

The SAS dies are not "pretty"; no effort is made to attain exterior "polish." In some respects, and for some parts, the equipment is a bit primitive, making some operations a bit slower and not quite so convenient as some of the higher cost equipment available. However, the important working cavities of the dies appear to be very well finished. Cores, core-seated jackets and the final swaged bullets are accurate in dimensions, concentric in form and exterior surfaces are smooth. The work from any of the dies ejects as easily as from any equipment I have ever used.

Each die is a complete unit of die body with outside threaded ⅞"x14 to fit most bench presses, with the work cavities and bores for ejection rods and pins machined into the single piece of metal. In each the squirt die and core-seater die the ejection rods are stopped at the top of their work travel by a shoulder on the rod bearing against a screw-in plug collar in the top of the die body. The swage die ejection pin is simply a length of wire-sized rod (more on this later). The ejection rods and pins do not have any knobs on top—when the special ejector frame is not used the work has to be ejected by tapping the top of the rods with a light mallet. When the special ejector frame is used it pushes the die ejector pins down and ejects the work from the die on the reverse stroke of the press handle.



Shooters Accessory Supply bullet making die set. Ejection frame in back. Left to right are the bullet swage die and punch, core-seater die and punch, core swage (squirt die) and punch, special punch holder for RSBS 2A loading press.

The "C" frame ejector is convenient in that it may be positioned so as not to interfere with feeding or taking work away from the dies. Except for work that might be excessively hard to eject (and something is wrong if that is the case), the "C" frame ejector is rigid enough to do its work in "straight line" without binding the die pins. The punch holders are of the 'floating" type which permit positioning the punch for proper entry into the die, and then locking in place.

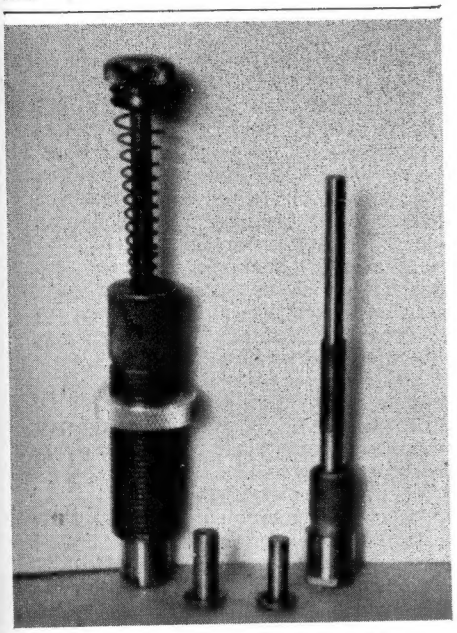
Considering each die in the order of its use: Other core forming squirt dies I have used have had three bleed-holes, equidistant around the die cavity, and were relieved to a bit larger size in the outer part of the die wall. The SAS die has only one bleed-hole and it is not relieved in the outer part of the die wall. In consequence, since one hole will allow lead to extrude only ⅓ as fast as three holes of similar diameter, it is wise to cut core slugs to give minimum squirt for proper core forming and to use a rather slow stroke in swaging, to permt the lead extrusion time to flow and avoid putting excessive strain on the swaging punch. (The operating instruction have a "caution" on this point but do not explain the reason for it.)

The core-seater die is conventional—the punch pushes the lead core to the bottom of the jacket and then expands to lead core and **the jacket wall** tightly enough against the die wall to retain the jacket in the die by friction while the punch is withdrawn. The core-seated jacket is approximately the same or very slightly smaller in diameter than the swaged bullet will be.

As mentioned earlier, the ejection pin for the swaging die is simply a length of stiff wire-sized rod. A simple little brass collar to fit over the ejection pin, with tiny set-screw to hold it in place, and a light wire spring to fit between the die top and collar, are provided to hold the bottom of the ejection pin above the bullet point of the die cavity while the bullet is being swaged. If this collar and spring is not properly adjusted, or if the adjustment may become loosened and the pin not held at its proper height, it is possible to swage the open end of the jacket around the ejection pin so tightly that the swaged bullet cannot be withdrawn from the pin. This is more a time-consuming nuisance than serious trouble. The die can be unscrewed in the press until the bullet with pin tightly encased can be withdrawn. Then, with the bullet held in a small vise, the jacket wall of the bullet point section can be filed away until the pin can be loosened in the lead core, and withdrawn. It means nothing more serious than a little time lost and the proper readjustment of the die position, but after one such experience one is apt to keep a closer watch of the "at rest" position of the ejection pin.

My experience with these die sets has been that I can make formed lead cores of just as small weight varaition as with any other squirt dies I have used and, this being

the case, the resulting bullets are as uniform in weight as bullets made in other equipment. (The little greater maximum weight variation in bullets than in cores is due to some variation in weight of the bullet jackets, which is usually greater for jackets than for cores.) The bullets are concentric in form, have perfectly smooth surfaces, and forming "wrinkles" in the squeezed down nose are no more evident than from other dies I have used or on other bullets I have seen. They are good bullets. For the very little comparative test shooting I have been able to do to date (which is the real "proof of the pudding), the accuracy in both calibers has been at least the equal to that of other bullets I have made in other dies, and commercial bullets I have shot in comparison.



Shooters Accessory Supply DeLux dies. At left the bullet swage die assembled in the adaptor with punch at right. At right the core-seater punch, die cavity insert and ejector rod.

About the time I had finished working with the .22 and .25 caliber dies to the point where I felt equal to reporting on them, Ted Smith sent me .30 cal core-seater and swage dies of a different type which he will be marketing in the near future and which will be designated as the SAS DeLux dies. This type, still a production manufactured item, are rather similar in design to the B&A and Bahler Die Shop equipment, in that the Die Body (or Adaptor, as Smith calls it) is separate from the die cavity units, which screw into the bottom of the "adaptor," thus one adaptor serving for the complete set of dies. Ejection pin assemblies are simple and easily interchangeable. A generous size, comfortable shaped hand knob interchanges from one ejector pin to another. The swage die ejector "pin" is a shorter piece of wire size rod inserted into the end of a rod the same diameter as the core-seater and squirt-die ejectors, and held in place by a tiny set-screw. I found by experience that this set-screw could become loose and allow the pin to drop down and become swaged into the bullet tip, as in the older type of die, but this is more a nuisance than a disaster. The spring assembly for holding the swage die ejector in its top position is more positive in operation than that in the older design.

Smith did not send a core squirt die because he did not have one in .30 cal. available at the time, but the squirt dies will be available in the new type and fit the same adaptor.

The new DeLux dies have somewhat better exterior finish than the older type. I think they are more convenient to work with. They make just as good bullets as the older type, but I don't see how they could make much better. They also cost nearly $10.00 more than the older type but I certainly think they are worth the difference in cost. Once you have a set of the DeLux dies, and may want to make bullets in another caliber, you only have to buy the cavity inserts and proper size ejector rods, at considerably less cost than the complete original outfit.

Both the SAS die types are illustrated herewith.

An additional neecssary item for any make of bullet making equipment is a lead wire cutter. Satisfactory wire cutters can be purchased for approximately $10.00. Anyone contemplating making his own jacketed bullets would probably already have one of the bench type reloading presses that would be satisfactory for the bullet making.

To sum up: It is quite certain that the jacketed rifle bullet makers of the competitive bench rest shooting clan will not dispose of their Biehler & Astles or Bahler Die Shop equipment and convert to the Shooters Accessory Supply equipment; they would be foolish indeed to do that. But those shooters who have had a yearning to try making their own jacketed rifle bullets, but whose shooting budgets would not stand the strain of the higher cost custom made equipment, may feel that they can bear the very modest outlay for the SAS equipment. They can purchase the SAS equipment with the reasonable assurance that after a little experience and practice in its use they can make jacketed bullets that will equal or surpass the accuracy they have obtained with store-bought commercial bullets, though they may not equil **in every respect** some of the special purpose factory made bullets. The home making of bullets tends to open new areas for experimenting which adds to the over-all pleasure from the shooting hobby.

The difference in cost between the components for bullet making (jackets and lead wire) and store-bought bullets is such that the making of less than 2000 .30 cal. bullets in the 150 grain weight range, or less than 3000 .22 cal. bullets in the 50 to 55 grain range,, will write off the cost of a complete set of the SAS dies. Since for most of us the home-making of our bullets is simply a part of our hobby activity, the time spent in the making is hobby or recreation time and of worth only to ourselves.

I have known and had dealings with Ted Smith of Shooters Accessory Supply since he started to market his first shooters' accessory (the Little Dripper) several years ago. I have used some of his products and had good reports on others. My experience has been that he is a completely reliable person to do business with, one who will stand behind and service the products he makes and markets.

P. H. T.

SUBSEQUENT SHOOTING of bullets made in the Shooters Accessory Supply dies, in all three calibers, in my guns and with my loading and shooting, has given accuracy equal to comparable bullets I have made in other equipment which were shot in the same shooting sessions and thus under the same comparable conditions. My sporter rifles were used for this comparative testing.

POWDERS AND IGNITION

by Fred W. Hallberg

The influence of this journal must be greater than its circulation indicates. Because of the recent articles on primers, friends now ask me to specify particular primers for particular loads. That is not easy. The best one can do is to assume that the characteristics of powders are understood and then try to describe situations that illustrate the meaning of correct ignition.

Any discussion of ignition must always dwell more heavily on the powder than on the primer because variations in type and quantity of charge are infinite. Yet both are interdependent and we shall never approach the ultimate in uniform pressures and velocities until that fact achieves the acceptance it deserves.

When the noncorrosive primer first became available to the handloader, it was the rule to always reduce maximum loads by two grains when that primer was used. In other words, if 50 grains was a maximum load with the corrosive primer, 48 grains would produce the same pressure and velocity with the noncorrosive primer.

Each powder type will burn most uniformly within a certain pressure-time range. In some powders the time element is extremely short as is the case with Bullseye. In others, such as 4350 and 4831, it is long. But change the intensity of ignition and you can speed up the burning rate of the slow powders and slow down the burning of the fast powders. This fact helps us not only to produce loads of maximum efficiency and uniformity but it will also help us to widen the usable range of any particular powder. Increase the intensity of ignition and it is possible to produce an acceptable pressure range with a lighter charge of a slow burning powder. Or reduce primer intensity and it is possible to achieve the maximum in progressive burning.

The above is intended to show that an intelligent selection of primers for a particular purpose will increase the usable range of available powders by a considerable margin. Of course, for the purpose of this discussion we must assume that all primers are uniform within a particular brand. We know there are differences between the brands in intensity. And we can take advantage of these differences to produce a wide range of useful loads. But back of it all, we must bear in mind the basic rule that the most uniform pressures and velocities are always produced with the mildest possible ignition short of hangfires.

In the July issue, I made the statement that "somewhere along the line (when creating a load) a point is reached when grain size vs. quantity comes to a dead end and can contribute no more towards ideal pressure and velocity levels. When that point is reached, we must call on the primer to contribute its bit towards the desired result." An excellent example is that of the .38 Special when loaded to maximum velocities in heavy frame revolvers. #2400 is a popular powder for that purpose. However, when that powder (designed for use in rifles) is ignited in a pistol cartridge with standard pistol primers, unburned grains remain in the barrel and many more are presumably ejected from the muzzle. Substitute the magnum or the regular rifle primer for the standard pistol primer and much of this difficulty disappears. Of course, if rifle primers are used the hammer fall must be heavy enough to properly indent them.

Perhaps we have gone too far with these loads. Now that we have reached the point where heavy primers are required to make them shoot, this may be the time to reconsider our choice of powder. Ed Yard tells us he has had superior results with 10.5 grains AL-5 (Alcan Powders) and standard primers in a heavy framed .38 Special. In the .357 Magnum, the charge is increased two grains. I believe 156 grain bullets are used in both loads.

Flexibility in the choice of primers will become more important as time goes on. A careful choice for use with inexpensive reclaimed surplus powders can vastly increase the usefulness of such powders. Let us look at two familiar numbers, 4895 and 4831.

4895 is a compromise powder designed for use in all .30 caliber military cartridges such as ball, armour piercing, tracer, and incendiary. 4895 is not the best choice for any one of these cartridges but it is the best choice for all around use. It was chosen to simplify production practice and avoid the inevitable mixups that are always possible in large industrial operations.

Choice of a military powder depends upon consideration of many factors. All military cartridge types of the same caliber are designed to shoot into the same specified area at a given distance. That is, if you fire a .30 caliber machine gun with a belt loaded alternately with ball, AP, and tracer, all must hit within a six foot circle at 600 yards. It is not likely that you would use ball in such a belt but I included it to illustrate my point. Normal loading is four or five APs to one tracer. All these bullets must fly within a slightly bent cone that has a six foot base at the target. To keep a ball (M2) bullet within this specified cone, the cartridge must be loaded to a mean instrumental velocity of 2740 feet. That is unfortunate because 4895 does not give its best performance under the standard M2 bullet at that velocity and pressure. Increase the velocity to 3000 feet and our ballistic problems disappear. But the increased velocity is unacceptable because it will cause the bullet to follow a path higher than that followed by the other bullets.

Some people try to overcome this problem of uniform pressure and velocity factors by increasing the size of the flash hole and so obtain an increase in the effective flash of the primer. I believe Utah Ordnance was the first to try this trick during World War II. Another way to overcome ballistic problems of that type is to use primers of different intensities but here the danger of mixup in a manufacturing arsenal is even greater than that with different powders and, of course, cost of production is also involved.

An appreciation of these factors make it possible for the handloader to utilize a relatively light charge of 4895 in a .30/06 and still obtain acceptable results. In other words, it is possible to utilize charges of 40 to 45 grains 4895 under a 150 grain bullet and still obtain fairly uniform velocities and pressures by substituting magnum for standard primers. But as the charge of 4895 is increased, primer intensity should be decreased. The same idea can be tried with .30/06 cases filled with 4831 and, say, a 180 grain bullet. I mention 180 grain bullets because my own tests on Ordnance equipment with fresh 4831 indicate that it is normally impossible to obtain uniform velocities and pressures with this powder in the .30/06 when standard primers and bullets lighter than 220 grains are used. In fact, in the case of this particular and very slow burning powder it would be well to base all charges on the use of magnum primers.

4831 was not designed for medium capacity .30 caliber cases but it has proved very useful in cartridges of generous powder capacity relative to bullet diameter. This includes nearly all magnum type cartridges and also such cartridges as the .25/06, the 6.5/06, and the necked down belted cases. Magnum primers can possibly further increase its usefulness in this class of cartridges.

There have been reports that reduced charges of 4831 can be made to detonate. If the powder is in good condition, I know of nothing that might cause such detonation. However, it possibly could happen if the powder is dead dry and has started to deteriorate. The Army has in the past had similar trouble with both .30 and .50 caliber propellents in the Arctic. It seems that the powder grains would freeze at 50 or 60 degrees below zero and that the concussion of the primer was sufficient to fracture the grains and reduce them to dust. By the time ignition had taken hold, the cartridge case was filled with the equivalent of Bullseye powder and such a charge could be very annoying indeed. However, that problem has since been licked.

Any really dry powder, including reclaimed powders, can produce erratic results. However, they can be corrected to some extent. Dryness means that both solvents and moisture have been lost. Only moisture can be replaced. The following is a workable method for doing so:

1. Thoroughly mix a quantity in a kitchen bowl so as to make the powder batch uniform throughout. Kitchen bowls are round and have no sharp corners to prevent a uniform mix.
2. Pour mixed powder into quart fruit jars that can be sealed airtight.
3. Soak two .30 caliber cleaning patches with water and place wet patches on top of powder in jar.
4. Seal thoroughly.
5. Reexamine powder in about two weeks. If patches are bone dry, repeat process and continue until powder refuses to absorb more moisture. At that point seal jar until used. When it is to be used, remix, pour back in jar, and you are in business ready to reload. Do not leave jar uncovered for any length of time.

But let us continue with the subject of ignition. There are times when mechanical considerations cause us to select a particular primer. When high-intensity loads are used in my Sako .222 most makes of primers will extrude back into the firing pin hole. Remington primers do not. As a result, when such loads are used in this particular rifle, I have no choice but to use Remington. And I should add that the pressures in those loads are well within safe limits.

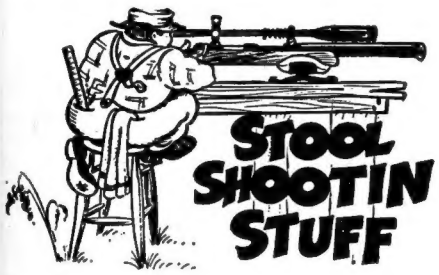
European Berdan primers and the Berdan ignition system is an interesting subject to include in any consideration of internal ballistics. The two small holes drilled into the web at the base of the anvil tend to meter and control irregularities in the primer flash and they can also be made to direct the flash to the point where you want ignition to begin. But now we are running into cartridge design and that is a subject I should like to cover separately in a forthcoming article.

LIKES THE SWEDISH 6.5M/M MAUSER: Last Fall I bought, just for fun, one of those little Swedish Mausers that you see advertised—6.5 X 55. Also got set up with dies right from the start and used the Norma Re brass. Have had fine success with that little rifle. It makes up into the nicest little sporting carbine that you have ever seen. Accuracy is good, though I haven't fired it over a bench.

I left the old .270 at home opening day for it snowed and I figured they (deer) would all be down in the swamp. Figured I would take that little brush gun just for

spite. Well, to make a long story a bit shorter, I got my buck in there, but I sure missed the scope. I could have potted him the first shot with the scope. The 6.5 is a potent little devil.

I was amazed upon studying the ballistics on it to note that with the fine sectional density of the heavier bullets that its drop and energy gives the '06 and the .270 a hard time when you get out around 300 yards. I haven't **tried** this, so for now it is paper ballistics. Dale Rowe, Vermont



Dear Phil:

To you, today's greeting is Happy New Year and even though the words will be read some days later when the magazine is printed, the greeting goes forth to the readers also. In the days of my childhood, I was taught that this is a period to turn over a new leaf toward bigger and better accomplishments and to desist from habits or traits that could be well dispensed with. Perhaps these teachings are good for all of us to remember but after all, this column isn't meant as a sermon so we will concentrate on ways that will make our chosen sport more enjoyable and efficient. Certainly we can all look back on 1961 and think of occasions when we would have done better if we had paid just a little bit more attention to the problem at hand. There probably weren't a lot of big things wrong with us or our equipment so we must guide ourselves in 1962 toward correcting the little errors, the occasions when we let something slide through that we had slight doubts about. Perhaps the bullet only went one half a diameter out of the group, perhaps we shot on a changing mirage and doubled the group but these things hurt and in 1962, we cannot have so many of those occasions if we are going to keep up with the gang.

Undoubtedly some shooters must have recognized the necessity for taking these steps a year ago because as Bob Hart said in his "President's Corner" article, more new Worlds' Records were made in 1961 than ever before in a single year. Just think that over, fellows, and recall how frequently you have heard it said or seen in print the statement that we have done about all we can do towards the improvements of accuracy. To the ultimate in accuracy, as we used to say, even though the ultimate has never been clearly defined, we still progress. Shall it be the one diameter group of five shots and then the one diameter group of ten shots? Shall it be at 100 yards and then to 200 yards or shall it be with a small caliber light weight rifle or a heavier rifle of small or large caliber? These all are but steps in the future, steps which we have not yet taken in stride, but steps which we definitely have in our minds.

I imagine by the time this column is being read, some of us will have journeyed to Elmira, New York to take part in the Winter Planning Meeting for the Eastern Region. Some of these occasions have been very pleasant ones and without exception, I think they each have contributed some to the Benchrest shooting game. I sometimes come home from one and tell myself that they are too far away considering the hardships of winter driving but by the time ten or eleven months pass by, I am looking forward with pleasurable anticipation to seeing old and new faces. Bob Hart has indicated that we have a number of serious problems to consider and I recognize that the mails are shuttling back and forth letters with suggestions for and against some of these subjects. I have expressed my ideas in this column a number of times on these subjects and have not been hesitant to make comments or recommendations or complaints about some of the things that I think are good or bad for the game but I do not feel that you or other readers want to hear this stuff repeated month after month.

I did receive a copy of a letter written by a chap who for a long time has had a great interest in benchrest shooting. On many of the aspects of the game we have seen eye to eye but in some instances, we are poles apart. I was rather concerned at the accent he put on the thought of removing the game or contest element from our meets. He sort of gives the impression that the attitude of a game has been detrimental and certainly unproductive of good for benchresting.

I take the opposite angle on this aspect as I sincerely feel that those who early developed our association were keenly alert to the aspect that "all work and no play makes Jack a dull boy."

There have been great experimenters in the past who have done much for the shooting game. Their operations have been written up and they, in their day, reached the eyes and ears of a scattered group of other shooters but to follow the old proverb that one picture is worth a thousand words, equally valuable is a demonstration of ability at a match before the eyes of many competitors and visitors. It certainly must be appreciated that had the early shooters merely endeavored to gather together a group of interested persons to demonstrate their ability and the worth of their weapons without the element of competition, the project would have withered.

Instead they wisely chose to make a few simple objectives, simple rules a loose organization, a sincere and friendly cooperation and to combine them into the age old sport of shooting at a mark. The enthusiasm which they put into their efforts made for popularity and in a few short years, benchrest type of shooting became frequent news. I, for one, cannot imagine the rapid growth of the game without this publicity element. By making the game simple and keeping it open to all, we prospered and built a firm foundation for our later efforts. It seems axiomatic that by making complicated restrictions and conditions which limit participation in our sport to relatively few shooters, we will retard if not stop our growth. Therefore, as we look back on our short history, we can see prosperity and progress in the early stages and in recent years, a series of problems and conditions which have tended to be frustrating.

We miss some of the original shooters who are now not with us, for one reason or another, which the warmly welcomed new members do not entirely replace. It is reasonably safe to say, however, that a very great percent of our membership is loyal and enthusiastic about maintaining the concepts of the game's founding fathers. The problems can be solved but not without a certain amount of "give and take" among the shooters and of what I believe is considerable importance, more willingness on the part of the event-sponsoring clubs to co-operate. I do not intend to infer that these organizations have not been co-operative; as a matter of fact, I think they have done a fine job in giving our shooters splendid service over many enjoyable weekends. Many of them have said they will give us exactly what we want if we will clarify our requirements.

This is a far different picture than is painted by some of our members as they

(Continued on Page Fourteen)

National Bench Rest Shooters Association, Inc.

NBRSA OFFICERS AND DIRECTORS FOR 1962

EASTERN REGION
Robert W. Hart (President)
300 West Fourth St.
Nescopeck, Pa.
Paul O. Gottschall (Deputy)
R. D. 4
Salem, Ohio
Brunon Boroszewski (Deputy)
Chestnut Ridge Rd.
Orchard Park, New York

MID-CONTINENT REGION
Larry Engelbrecht
122 Gow
Wichita 3, Kansas

MISSISSIPPI VALLEY REGION
Alfred W. Walter
1925 Raft Dr., Hanley Hills
St. Louis 33, Missouri

GULF COAST REGION
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6806 Lake Shore Drive
Dallas 14, Texas

NORTH CENTRAL REGION
Walt C. Siewert
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NORTHWEST REGION
Dr. Rod Janson
606 West Galer
Seattle 99, Washington

SOUTHWEST REGION
John B. Sweany
187-A Silverado Trail
Calistoga, California

Secretary-Treasurer
Bernice E. McMullen
603 West Line St.
Minerva, Ohio

NBRSA MEMBERSHIP DUES:

Individual annual dues $5.00 (includes magazine subscription for membership term). Associate member (wife or husband, son or daughter under 18 years of age, of member in good standing—no magazine) $2.50. Life membership, $75.00. Annual club affiliation fee $10.00.

PRESIDENT'S CORNER

We are entering a new year, may it be one of progress in our goal for accuracy and a credit to our organization.

I am receiving very fine letters from the members that cover many different phases of our activities.

On the subject of rests a number have been received from both sides of the question. Almost all have been written with an understanding that there are two lines of thought and that the other fellow is entitled to his views. This attitude will surely bring us a solution.

I have received a very fine suggestion from Mr. L. E. Wilson, as follows; "To increase interest in the National Championship Matches, we check the past results of these matches and establish who has fired the best 10 shot group at 100 and 200 yards; the best 100 and 200 yard aggregate; best grand aggregate and other facts and records that have been established during the firing of a National Match." This list will then be published and the holders of these top performances recognized. This will also give competitors in future National Matches something additional to shoot for.

Another request is that Clubs provide all possible information to Precision Shooting on the equipment used by the winning shooters. The more detail that is furnished the more interesting and informative it will be. One specific request is that the type of rest equipment be a part of this information. I am sure the membership will show their appreciation to the clubs that follow this suggestion.

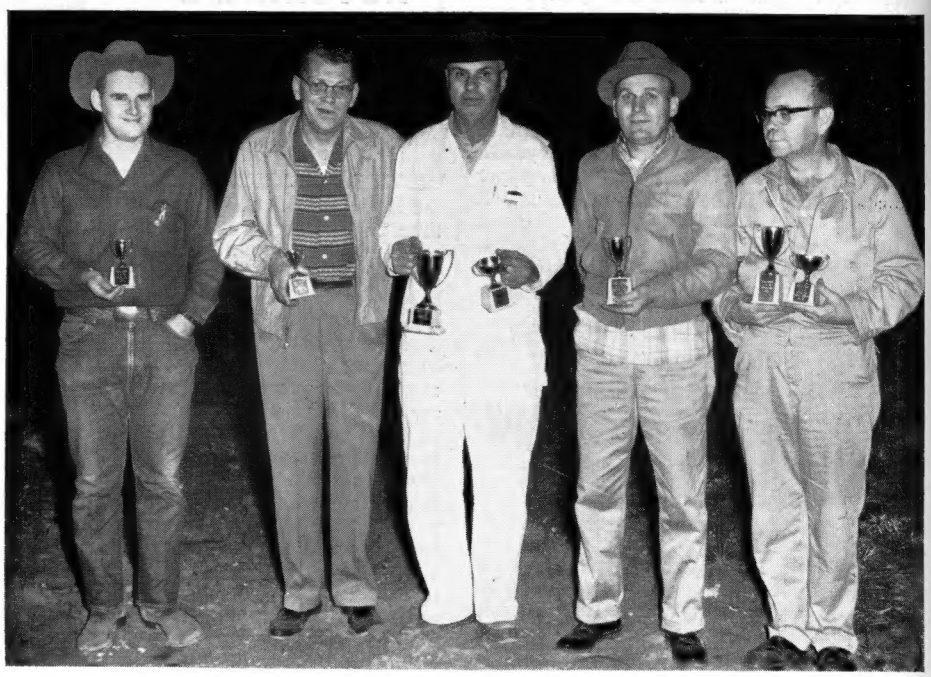
Another letter entered a complaint that left me a little shook up; "That the shooters are no longer exchanging information freely, but are hiding their improvements for the purpose of winning." I surely hope that this condition does not exist and if it does, it should cease before it affects our progress and the good sportsmanship that we enjoy. The one claim that we have is that all information is available and freely given. May it always be this way.

Letters are received on other subjects. All are read and considered and much of this will be passed on to the directors for their consideration.

The outlook for our new year is excellent. We have an increase in membership, in new clubs, and the indications are that there will be more registered matches than ever were scheduled before. Won't you lend a helping hand to a club, to a new the standing of our organization and add to member, or any other way that will increase the pleasure of competitive bench rest shooting.

Until February,

Bob Hart



Kansas City bench rest match aggregate winners, (L to R) Dixon Herman, Howard Baucher, Horace Powers, "Bud" Carden and John Mayer.

A CORRECTION ANNOUNCED

At the awarding of winner prizes following the firing of the 1961 National Bench Rest Rifle Championships at Johnstown, New York, Alfred Walter of St. Louis, Mo. was announced the 200 yard champion and awarded the Sierra Trophy. His score was announced as .5045 M. O. A.

Later, upon rechecking, it was found that Walter's announced aggregate was a statistical error and was actually .5405.

Homer L. Culver, Silver Spring, Md. was found to be the 200 yard champion with an aggregate of .5107 M. O. A.

This unfortunate error has now been corrected and the Sierra Trophy has been awarded to Mr. Culver.

KANSAS CITY BENCH REST MATCH

Ten shooters competed under good shooting conditions in the final 1961 bench rest shoot of the Mill Creek Rifle Club at Kansas City, Kansas Winning groups and aggregates were excellent. The aggregate winners were:

	100 yds	200 yds	NMC
Horace Powers	.340	.355	.3475
John Mayer	.376	.387	.3815
"Bud" Carden	.390	.4265	.4082
Howard Baucher	.361	.501	.4310
Dixon Herman	.523	.4575	.4902

The Mill Creek Club members are busily engaged in a range improvement and expansion program which will provide an all-purpose rifle and pistol facility with ranges to 300 yards maximum.

THE "HANDY-DANDY" RELOADER

The "HANDY-DANDY" portable reloading tool for rifle cartridges, manufactured and marketed by Consolidated Armslube, P. O. Box 1238, Alamogordo, New Mexico, is a neat, convenient and very practical pocket-size reloading outfit for the target rifleman. It is particularly desirable for those who wish to do reloading at the range, either in personal experimental shooting or at bench rest competitions.

The de-and-recapper is of the old "POPE" design, with the addition of an adjustable case neck sizer on the decapping stem. The decapping stem, pin, shell-holder and primer seating punch are all stock Lyman loading tool components, an item which helps keep the cost of the tool in the moderate range and a convenience in replacing parts, should that be necessary. The tool is made to fit the fired cartridges for a particular rifle. The taper neck resizer, on the decapper stem, is adjustable to size the case necks just enough to hold bullets friction-tight but without unnecessary tension—the desirable condition for target shooting. Once the neck sizer is adjusted, the decapping and neck sizing is accomplished in one operation. The free end of the operating handle has a little insert for cleaning the primer pockets. In recapping, the primer can be quite distinctly felt to "bottom" in the primer pocket.

The straight-line bullet seater, used in

conjunction with the de-and-recapper, has a spring-loaded floating chamber which assures the case being concentric and properly lined up with the seating throat. In using, a powder charged case is inserted in the shell-holder of the de-and-recapper, the seating chamber placed over the cartridge case and shell-holder, seating plunger removed, bullet placed in the chamber (base first), plunger returned and bullet pushed to its seat in the cartridge case. Seating depth can be adjusted by screwing in or out the seating stem in the generous size plunger head, and adjustment is locked with a set-screw.

The "Handy-Dandy" Reloader

If neck tension on the bullet is light, the bullet seating can be done with the tool held in the two hands. If a little firmer bullet seating is desired, case necks can be resized to give more tension and in seating, the base of the de-and-recapper rested on a table or bench top while the bullet is pushed to its seat.

With a powder measure or weighed charges in containers handy by, a single cartridge can be decapped, neck-sized, primer pocket cleaned, reprimed, case charged with powder and bullet seated just about as quickly as it takes to tell about it. This little outfit would be fine for the reloading necessary for firing a series of test shots with a single cartridge case.

The complete outfit, de-and-recapper and bullet seating chamber, can be carried in an ordinary coat pocket without overloading the pocket a bit.

The "HANDY-DANDY" tool I have been testing was made for my .308 Savage Model 110 rifle I have used it enough that I feel safe in recommending it to riflemen who are interested in having such a reloader.

P. H. T.

TH' SHOP, ETC.
By Roy F. Dunlap

Haven't been around for awhile. Told you all I knew. Didn't take too long. Also, my typewriter was shot. Got a new one now. A few things have accumulated warranting mention, plus my wanting to comment on various past letters, etc. in Precision Shooting.

One is, if you want a top match rifle, any catgeory, don't subcontract it. If at all possible let one maker turn it out complete. That way he's responsible. If you provide an action yourself; have a barrel-maker barrel it; have a stock man do stock work; put on the sights yourself and test it yourself; it's your baby if it doesn't shoot! The barrel man isn't going to feel responsible if action gives trouble or if accuracy isn't up to expectations—he didn't bed it or test it, did he? Likewise the stocker feels no great pain if things don't work out—he didn't make the barrel or even have a chance to test the rifle and find out if his bedding was right. If the wood is the right size, he did his part. I quit the partial jobs years ago, in self-defense. Somebody would send in a rifle for a new barrel and the bedding would be a total loss—no barrel would perform in the stock so I'd have to rework the stock or the barrel would bounce. Or, I'd get in a barreled action, put a stock on it, find I'd have to rework triggers, replace firing pins and springs, etc. And if the barrel was poor, the customer invariably blamed my bedding! Now I won't rebarrel any rifle except ones I've made that have been shot out, though I'll do a combination rebarrel-restock job on M70's, using the customer's action.

Proved something I have suspected for a long time—doesn't pay to seat bullets out to touch throat in magnums—can wreck cases for reloading. I was testing some 190 grain 300 H & H and improved magnum stuff, loaded hot, seated bullets way out—so far out they held cases back tight against bolt face. When fired, bases expand, starting another belt below regular one. Looks like a little step on case at forward edge of the belt. Same thing happens on both new and once-fired cases. After firing, they won't size right and won't go back in chamber so good whether sized or not. No; I don't have excess headspace, either.

Was amused at the Weatherby controversy. On account of about the only similarity I can see between a bench-rest accuracy nut and a Weatherby fan is that they both wear pants. The exact opposite ends of the rifle-interest field! However, you Precision Shooters owe Roy Weatherby something I've never seen or heard mentioned anywhere. Almost alone he broke down the barrier of convention against "wildcat" cartridges held by both the shooting public and the arms companies, whether they'll admit it or not. Thirty years ago if you mentioned your hunting rifle was a .280 DuBeil or a .25 Niedner, people stepped away, and the sporting goods salesman was sort of doubtful about selling a can of powder to such a dangerous radical. Roy was

(Continued on Page Ten)

THE COLONEL WHELEN RANGE

The Bench Rest Rifle Club of St. Louis has been and is engaged in an improvement and expansion building program which will soon result in an all-purpose shooting facility for the St. Louis area.

The Club Directors have named the range the COLONEL WHELEN RANGE in honor to Colonel Townsend Whelen who was a member of the club (this action was taken prior to Col. Whelen's death).

The club is affiliated with NRA and NBRSA and has a present membership of nearly 150.

The range is located on the southeast bank of the Missouri River in St. Louis County, about 1½ miles north of U. S. 40, and is about 30 minutes travel time from downtown St. Louis.

The range facilities include: For rifle; 18 covered outdoor bench-rest firing positions with concrete tables on a concrete slab. Eight feet per position also allows position shooting from this location. There are in addition four indoor bench-rest and position firing points. Ranges are 50, 100, 200 and 300 yards. There is also a running deer target range.

For pistol; a separate 200 feet long range with 25 and 50 yard firing positions. It is planned to add shotgun facilities in 1962.

A 30 x 17 feet combination club house—shooting house is of concrete block construction with 4 x 10 inch exposed rafters in ceiling, with electric lights and heating.

A person to contact regarding the range is; Mr. E. R. Jackson, 1812 N. Hanley, St. Louis 14, Mo. (telephone — PArkview 5-2740).

Th' Shop, Etc.

(Continued from Page Nine)

the boy who wasn't afraid to advertise something different and argue for it.

The doubts, controversies and arguments on bench-rest shooting itself aren't amusing. I'm not a bench-rest shooter, though I built my first bench rest in 1934. I have always thought the competitive setups wrong. They were set up by men who were more experimenters than competitors in their thinking, and in trying to promote individual competition and experimental arms and ammuntion development at the same time ended up with an unrestricted class which is restricted and a heavy varmint class which is really a bench-rest class, etc. On the competition angle, the human factor must be considered and some human manual effort be incorporated, so a man can feel that maybe **he** can contribute enough to his outfit to win a match.

For my money, the unrestricted class should be unrestricted, period. Allow machine-rest type mounts, electric and pneumatic triggers, any or no stocks—about the only limitation would be that the outfit be portable, not a laboratory installation! For a bench-rest rifle class, limit rifle and scope to twenty pounds, use only a soft sand-bag for butt rest and make the competitors work at competing. This just might bring back quite a few of the boys who gave up on the armaments race years ago. For varmint rifle class, make it thirteen pounds with scope not over 10X, rest on sandbag, and measure the groups from center of aiming point or target, with no sighters! In other words, real varmint rifle stuff, not for varmint rifles made for never pointing at a varmint. For the ultimate in accuracy I realize that the human error must be reduced to the point of elimination, but for competition some of the human element must be preserved to encourage shooters. A straight issue of equipment vs equipment appeals only to the engineering mind, really, and there aren't enough of them to make successful match promotion. I will now retire to stormcellar for a few months.

So what else is new? Wonder what comes next with Remington—hear they'll drop the .244 rifle. This .22 Jet revolver business sort of stupid—they could have just brought out guns for the old .218 Bee and been much better off, but then, they'd have had nothing brand new to advertise. Winchester does it again—reworked the 52 without much improvement. Buttstock resembles 40X, not too much, about 99%, that is. Same old C trigger, so Matt Canjar won't suffer loss of sales. Rail and guard are aluminum—boys, don't scratch, or you'll have to buy black paint. Hope Remington doesn't plan anything radical with 40X—I just had to make prone stock patterns for it for AAMU. Both right and left-hand types, yet. This year's crop of Sierra match bullets doing fine at long range—at last National Matches at Camp Perry, Lou Roninger, of Phoenix, lost one point in 50 shots at 1000 yards—and I as coach lost that one for him in Herrick—he used standard .300 H & H, 190 gr. HP boattail. Dick Ilao said he had 70 straight bulls, using 200 grain bullet in .30/338 case. I lost one point in 47 shots at 1000 yards with metallic sights (yeah, in Leech shoot-off!) with 200 grain in improved .300 H & H, Pfeifer case, that is.

Been playing with one of the Ohaus 505 powder scales promoted by Lyman. Pretty good except for the outsize pan—OK for weighing out pinto beans but highly unhandy for powder, far as I'm concerned. Easy to fix:—you take a pan off a Redding scale, a 10-inch length of ⅛" welding rod, a pair of side cutters and bend up a new pan-cradle Clip ends a bit at a time until the small pan and cradle balance up. The ⅛" rod makes up the weight difference in pans.

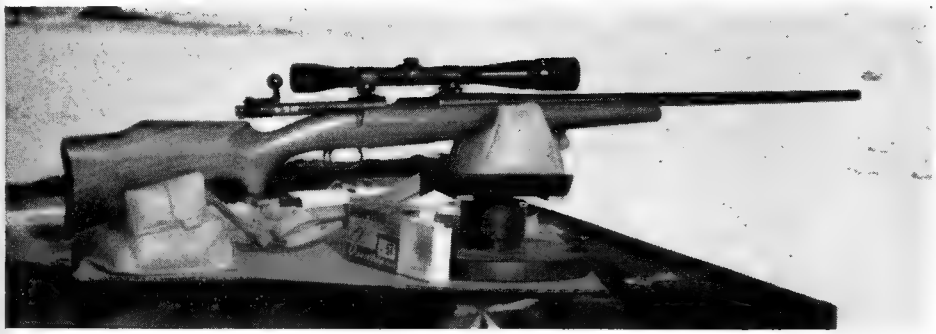
"PROTEKTOR MODEL" SAND BAGS

For some of my late season home range bench rest shooting sessions I have been using two types of leather sand bags made by Mr. Basil Tuller at Galeton, Pennsylvania, with trade name of "Protektor Model" which also designates other leather-goods items for shooters that he makes.

The bags are made of top grade cowhide leather and stoutly stitched with nylon thread. They have a very ingenious and convenient arrangement for filling and emptying. The bags seem to be of excellent quality in all respects and should give long service.

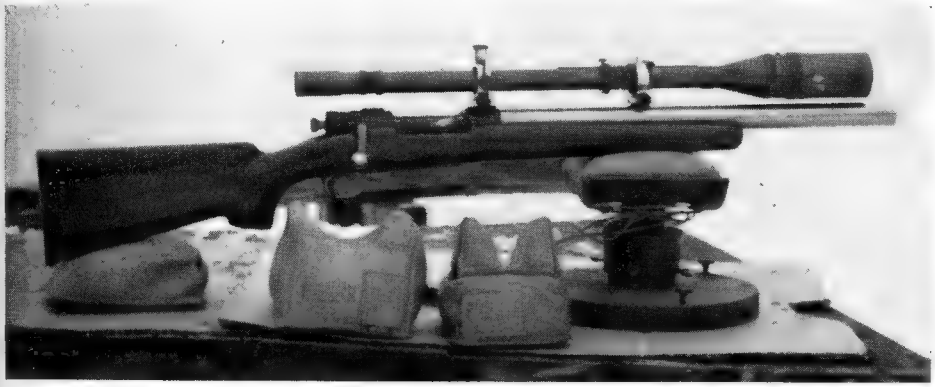
One set of bags, designated as No. 1 set, consists of a rather conventional pattern of flat bags for both front and rear rest. The front bag, for pedestal tray, is 6 inches long, 7 inches wide and approximately 1¼ inch thick when normally filled. It has a convenient feature of leather tabs on each corner which extend over and under the edges of the pedestal tray and are fastened underneath with leather thongs, supplied with the bag. While this size bag may be a bit over-size for some pedestal trays, it just fits the rather wide, flat tray of my own pedestal and with its thong tying to keep it in place, is the most satisfactory bag I have ever used on that pedestal. The rear bag is 6½ inches long, 5 inches wide, 2¼ inches thick at the front end with a slight slope toward the rear and a short, sharp slant to the bottom at the extreme rear.

The second set, designated as No. 2 set and now a stock design, are of a contoured, cradle style and were designed to a special order for a Pennsylvania shooter late in the summer of 1961. The rear bag of this set is said to have been dubbed by bench shooters as the "rabbit-ear bag." This rear bag is 6 inches long and 5 inches wide in the main body section, which is approximately 3 inches thick in front and 2½ inches thick at the rear. The "ears," each made and sewn to the main bag separately, are 2½ inches high and extend the full length of



Sporter rifle on Tuller "Protektor Model" snad-bags, No. 2 set.

the bag. The cradle formed by the two ears will snugly fit the under side of a rather thin sporter rifle butt-stock, if the ears are rather tightly filled, but will accommodate a thicker target type butt-stock if not too tightly filled. Each "ear" is filled independently of the other and of the main bag section. The front bag is 5½ inches square on the base and the top is contoured to form a cradle rest for the rifle forend, approximately 5 inches high to top of "ears" and 3½ inches thick at bottom of cradle. The ears on this front bag **are not** made separately and, depending on how tightly or loosely the bag is packed, the cradle may be made to accommodate the forend of either a slim sporter or wider target type stock. This front bag does not have the tabs and thongs for tying in place on the pedestal tray, but in my opinion it should have them.



Rifle on Tuller "Protektor Model" sand-bags, No. 1 set. The No. 2 set in foreground shows resting contour of the bags—"rabbit ear" rear bag at right.

Mr. Tuller states that the No. 2 set of bags has become quite popular with the shooters in some areas in the short time it has been available, especially the rear "rabbit ear" bag. My first impression upon examining the bags was that this No. 2 set should be "tops" for shooting the sporter and varmint rifles from rest. However, after a very limited trial of the bags I am not fully convinced that my first impression was right, at least **for me,** but more use and getting acquainted with this style of bag will do more "convincing," one way or the other.

With this No. 2 set of bags there are several square inches of contact between the wood of the stock and the leather of the bags. Wood against leather seems to provide a natural friction-bond. It has been my limited experience to date that due to this friction drag, the recoil of the rifle tends to drag the bags backward and displace them, not uniformly, rather than the rifle recoiling freely in the leather cradle. To date I have found this tendency rather undesirable, **for me.**

It is possible, even probable, that if the bags were restrained in some manner from moving backward, this friction-drag feature might be desirable in slowing recoil when shooting light weight sporters of the more powerful calbers, and also might tend to restrain the torque-rolling tendency of this class of rifles, which would also be very desirable.

I still think that the design of the bags in this No. 2 set has desirable possibilities and I shall want to do a lot more trying and experimenting before I turn thumbs-down on that design.

I have found the No. 1 set of conventional bags to be fully as satisfactory to me as any of that pattern that I have ever used before. This set will comply in both letter and spirit with the NBRSA rest rules for varmint and sporter rifle competitive shooting. I would be doubtful that the No. 2 design of bags would even comply with the letter of that NBRSA rule, and in my opinion, certainly wouldn't with the spirit or intent of that rule. I doubt that the No. 2 set rear "rabbit-ear" bag would comply with the rest rule for NBRSA Unrestricted Rifle-Limited Class competition.

The retail cost of the No. 1 set of two bags is $6.50 and the No. 2 set is $9.75. Single bags of either set may be purchased separately. Mr. Tuller advises that he will make bags to any special design submitted, at comparable prices plus a modest charge to cover making up the special patterns. He allows trade discounts to bona fide jobbers and dealers on minimum orders of one dozen sets of either pattern.

P. H. T.

COMPETITIVE VARMINT RIFLE ACCURACY

I have thought, and I suspect some others have, that the accuracy of heavy varmint class rifles in the 1961 competitive season probably equalled or surpassed the 5-shot match accuracy of the heavy bench rest rifles only a few years ago.

I have looked up results from the two largest matches in 1951, the last year that 5-shot matches were pretty universally scheduled for bench rest competitions, the Memorial Day shoot at DuBois, Pa. and the Labor Day shoot at Johnstown, N. Y. The following figures will speak for themselves. It should be remembered in making comparisons, however, that the number of competitors at each DuBois and Johnstown in the 1951 matches exceeded 100, while at the 1961 National Shoot at Augusta, Ohio, the number of heavy varmint class competitors was just over 50 and at the Eastern Region Championships at Dryden, N. Y., there were 25 competitors.

For the DuBois shoot, the three 100 yard groups listed were the three smallest fired; there were two others under .250". Other than this, the groups listed are those that won the fired matches. Groups are in inches and aggregates in minute of angle. Here they are:

DuBois, Penna.

100 yds.	200 yds.
.183	.656
.196	.714
.234	.483

(Continued on Page Twelve)

Competitive Varmint

(Continued from Page Eleven)

	.483
	.498
.391 agg.	.503 agg.
.442 agg.	.504 agg.
.456 agg.	.513 agg.
.457 agg.	.522 agg.
Johnstown, N. Y.	
.171	.670
.176	.401
.160	.579
.255	.444
.135	.398
.317	.407
.322	.447
.249	.674
.263	.463
.195	.432
.3483 agg.	.4546 agg.
Augusta, Ohio (1961)	
.270	.452
.245	.712
.236	.591
.245	.603
.262	.711
.307	.642
.3834 agg.	.4692 agg.
.3834 agg.	.4751 agg.
.3884 agg.	.5278 agg.
.4188 agg.	.5327 agg.
Dryden, N. Y. (1961)	
.282	.595
.230	.788
.311	.730
.184	.690
.190	.258
.238	.464
.314 agg.	.434 agg.
.328 agg.	.471 agg.
.343 agg.	.479 agg.
.406 agg.	.507 agg.
.430 agg.	.524 agg.

While it appears from the foregoing comparisons that present day 13½ lb. weight limit Varmint rifles are producing accuracy equaling that from the heavy bench rest rifles in 5-shot matches ten years ago, but not yet surpassing it. The Varmint rifles do not equal the accuracy of today's heavy bench rifles in 5-shot matches.

Bench rest rifles weighing much over 25 lbs. were rarely seen at matches in 1951; in general, the rifles were in the 15 to 20 odd pound weight range. Ten years ago the majority of bench rest competitors were shooting soft-point bullets from commercial makers, chiefly Sierra and Hornady, and these bullets were making some of the group records of that time. Some shooters of that time were making their own bullets, and winning matches with them, but those shooters were a small minority. Very nearly all bench rest shooting in 1951 was done resting the rifle on sandbags, fore and aft, so that condition was equal with Varmint Rifle Class shooting today.

In doing this checking for accuracy comparison, I was impressed by the excellent accuracy being produced with the Light Varmint Class rifles (10½ lb. weight limit).

The predominant cartridges used in both the 10½ lb. rifles and the heavier rifles are .22 cal. The higher power scopes permitted and generally used on the heavier rifles simply allow the shooter to see better. The essential difference between the 10½ lb. over-all weight rifles and the heavier rifles is the 3 lb. or more differential in weight. Considerably fewer shooters are competing in registered light varmint rifle class matches. With the foregoing in mind, compare the following match winning groups and aggregates for light Varmint class from two 1961 matches:

The National Shoot, Ohio (27 comp.)	
100 yds.	**200 yds.**
.263	.547
.250	.758
.251	.760
.246	1.095
.315	.560
.405	.663
.443 agg.	.515 agg.
.464 agg.	.560 agg.
.469 agg.	.589 agg.
Eastern Regional, N. Y. (10 comp.)	
.252	.954
.446	1.362
.291	1.160
.439	.926
.420	.667
.318	.750
.496 agg.	.553 agg.
.522 agg.	.669 agg.
.565 agg.	.793 agg.

SPORTER RIFLE CLASS: Since a majority of competitors in the Sporter class shoot cartridges of the minimum caliber permitted by NBRSA rules (6m/m or .243) and a goodly number use customized cartridge cases of considerably less powder capacity than the 6m/m rounds normally used for hunting, even down to the .222 Magnum case necked up to 6m/m, the winning groups and aggregates obtained are only a little larger than those obtained with the light varmint rifles in .22 caliber.

The National Championships in Ohio this past summer had competitors in the Sporter class from a wide area of the country, and 28 of them, so winning groups and aggregates from that shoot should be representative for comparative purposes. Here they are:

100 yds.	**200 yds.**
.436	.691
.463	.849
.346	1.068
.368	.764
.404	1.000
.378	.773
.5258 agg.	.6152 agg.
.5354 agg.	.6913 agg.
.5688 agg.	.6939 agg.
.5738 agg.	

EQUIPMENT: It would seem reasonable to assume that the equipment used in the 1961 Varmint and Sporter Championships is fairly representative for those classes and indicates the present day trend.

The .22 cal. was dominant in both the varmint classes, and this is true for varmint hunting rifles as well as the match rifles. One or the other of three cartridges were used by the majority of the competitors—the .222 Remington, the .222 Remington Magnum and the .219 Donaldson Wasp. In the heavy varmint matches there were 24 of the .222 Rem., 11 of the .222 Mag. and 10 of the .219 Don Wasp used. In the light varmint matches it was 12 of the .222 Rem., 4 of the .219 Don and 3 of the .222 Magnum. Three 6m/m rifles were reported for the heavy class and six for the light class (a few shot the same 6m/m rifle in both light varmint and sporter classes). Brunon Boroszewski shot .308 cal. rifles in all three classes. One .220 Swift was reported in each heavy and light varmint classes.

The favored action for heavy varmint class at this shoot was Remington, for a total 25 (including 7 of the 40X rifles) of the 54 total reported. Nine used Sako actions and seven used Mauser. Nine custom actions were reported; six Shilen, two Detsch and one Hart. Others were two

Win. M70, one Schultz and Larsen and one Jap.

The favored barrels were Hart (17) and Douglas (16) for a total of 33 of the 50 reported on cards. Eght reported Remington barrels, which might mean one reporting a 40X as simply Rem. action and barrel or a 722 factory rifle. Three reported Sako barrels, which would seem to indicate at least three Sako factory rifles. Two Johnson P. T. barrels and one each Ace, Apex, Day and Holmes were reported.

Unertl (25) and Lyman (20) accounted for 45 of the 53 scopes reported. There were 5 Bausch & Lomb, 2 Litschert and 1 Fecker. Favored scope powers were 20X (26) nad 24X (13). Four of each 30X, 25X, 15X and 12X and one 16X were reported. Thirty-one used home swaged bullets (20 indicated as from B&A dies), while fourteen reported bullets by custom makers. Six shot Sierra bullets and one used Hornady bullets. The favored weights of .22 cal. bullets were 52 gr. (18) and 53 gr. (14).

The primers reported were; Remington 27, CCI 10, Federal 7, Western and RWS 2 each.

IN LIGHT VARMINT CLASS, the big majority (20 of 27 reporting) shot one of the .22 calibers (12 the .222 Rem., 4 the .219 Don Wasp, 3 the .222 Mag. and 1 the .220 Swift). Six shot a 6m/m cal. and one a .25 Souper.

The Sako rifles were outstanding in popularity in this class with 11 actions and 9 barrels reported. Two Winchester M70 actions and barrels were reported, presumably two factory rifles. There were 5 Rem. actions reported (including one 40X rifle), 4 Mauser, 3 Shilen, 1 Weber and 1 Martini.

Besides the Sako, Winchester and Remington barrels mentioned, there were 7 Douglas, 5 Hart and 1 Apex reported.

For scopes there were 11 Lyman, 8 Unertl, two each Pecar and Weaver and one Litschert. Powers were ten 15X, six 10X, three 12X, two 16X and one each 14X and 8X.

Of the 23 reporting bullet used, 21 reported either home made (18) or custom made (3), while 1 used Speer and 1 used Sierra. For primers, 11 reported Rem., 4 CCI, 2 each CCI Mag., RWS and Win. and 1 Federal.

IN SPORTER CLASS, 25 reported using 6m/m or .243 caliber, 2 reported .30-06 and 1 each 6.5m/m, 7m/m, .250 Don and .308. Actions reported were 8 Mauser, 7 Remington (including 2 40X), 5 Shilen, 4 Sako, 3 Win. M70, and 1 each Enfield, Springfield, Jap and Weber. Nearly half (11) shot Douglas barrels, while 5 reported

(Continued on Page Fourteen)

Competitive Varmint

(Continued form Page Thirteen)

Hart barrels, 2 Rem., 2 Win. and 1 each Sako, Apex, Colt and Sukalle.

The scope make tally was 6 Bausch & Lomb, 6 Lyman, 5 Unertl, 4 Weaver, 2 each Leupold and Pecar and 1 Redfield, a majority (23) used scopes of 8X (the maximum power permitted), 4 used 6X and 1 used a 4X.

Home made or custom made bullets were reported by 15 and 13 shot Sierra bullets. The primer tally was 10 Rem., 9 CCI, 2 each for Federal, Western, Winchester and RWS, and 1 Peters.

COMMENT: Some observers, readers and perhaps some shooters will complain that the rifles used in the light rifle bench rest competitions are not "practical" hunting rifles. That can be admitted as true in many cases and it will become increasingly true as time goes on. The serious competitor in any shooting program selects his equipment (as permitted within the rules) with the belief that it will aid him to win matches. Since target shooting is a sport in itself, that viewpoint seems sensible and benchresters are no different in that respect than those who participate in any other competitive shooting program. It is simply a case of picking the best tool obtainable for the job to be done.

P. H. T.

Stool Shootin Stuff

(Continued from Page Seven)

have attempted to gain their own way and have their wishes and ideas prevail with little regard to the wishes of others. To bring out this thought more clearly, let me point out an example of such action. Several years ago at what was probably one of the largest and most serious meetings the benchrest shooters ever held. The gathering after careful discussion and upon recommendation of many shooters who had the best interest of the game at heart, recognized that there was a rightful and desirable trend towards two types of benchrest shooting, roughly divided into types which accent either the ability of the man or the ability of miscellaneous equipment, both of which have as the objective, the making of small groups. A vote was taken and there being only a few dissenters, it was overwhelmingly decided by approximately a 90% affirmative vote that the two classes of shooting be established and maintained for the balance of the year. Three hours later, steps were being taken to nullify that vote. It does not seem important to me to bring out in this column the series of events which transpired and have culminated in the absence of two class shooting at almost all meets because of the apathetic, dilatory and obstructionist efforts of some people. It does seem right for me to point out that there should be an effort to correct this condition because it is the sincere wish of the rank and file of the shooters that the position of each type of shooter be respected and provided for, so that rifle matches of our type may prosper and be enjoyed by all participants.

If there is progress made at the Winter meeting at Elmira on the above subject, I shall report in the next column, and if it is possible to obtain a referendum by reaching as many people as possible who shoot from the bench even though they only attend occasional matches, via a questionnaire, I hope you will answer the questions and return it.

On the NBRSA page of the last issue of our Magazine, I read, in the comfort of a snug warm house, during a rugged winter day, of the record which Mike Walker made by maintaining an aggregate of .5238" for five 5-shot groups with the Sporter rifle.

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He didn't make the rule which classified the 6 M/M-.222 Mag as a Sporter rifle any more than I did and I am not sure that he really considers it as a sporting cartridge so whether you agree or disagree, I wish you would think over seriously this fine performance.

I was present at that match and well know the conditions that he had to cope with. The weather was far different than that I spoke of a sentence or two ago and it is hard to conceive less friendly shooting conditions for record making. The day was so hot and the mirage so miserable that even with an 8X scope, the aiming points and scoring rings were but a nasty blur. Even with an excellent spotting scope, it was difficult to pick out the bullet holes and not particularly conducive to good scoring to try to do so because conditions were changing so rapidly that one would hardly dare take time to lean over to look through the spotting scope. It was a mighty fine record and you folks who have known Mike as long as I, or longer, have often before seen him turn in a group so small when ours were so big that it was hard for us to realize that he was shooting under the same conditions as we.

I enjoyed seeing Ed Shilen break into print in such detail. We who know him recognize how meticulous he is about his stocking and his metal work. He is prone to carefully listen to what others have to say before he expresses his opinion and in spite of the marked success which he has had as a new shooter, he is much concerned with searching for the answers rather than impressing upon his listeners that he knows them. He is well qualified in demonstrating the quality of his action and his gun work and it is typical of him that he should build up a big field of neighboring competitors to shoot against him in frequent competition. He probably well recognizes that he will never make a fortune selling his action or his gun work but I've known a lot of shooters who well might have maintained the competitive lead which Shilen had by merely not distributing widely and within his own territory, his products.

It always gives me pleasure to note the pride which some producers take in their products and I have noticed that the best of them try hard to keep their leadership from slipping by giving the shooters a certain amount of technical advice and information beyond that disseminated in their normal advertising. I recenlty had an opportunity, through correspondence and the reading of newspaper publicity about Cascade Cartridge, Inc. of Lewiston, Idaho to see how things react to our benefit. The publicity resulted when a group of German experts travelled to Idaho to talk shop with the CCI people. My correspondence with CCI was about their new primer. I would have loved to have been present at the expert conference but that couldn't be so I am all the more deeply appreciative of the attention which their sales manager, George E. Fairchild, gave my problem.

I have long contended that a primer manufacturer's best efforts are often thwarted by careless handling of his primers after they leave his hands. I feel that poor storage conditions are frequent and serious offenders but in addition to this trouble, CCI lists five other frequent contributors to misfirings, and even though they don't go as far as misfiring to plague the benchrest shooter in every instance, they can contribute toward larger and erratic groups if we are not alert to the hazards. Perhaps Cascade, Inc. will send you one of the sheets indicating the causes for misfiring, but briefly, here are the main features that can be causing those groups to be larger than you would like to have them even though you are already using CCI primers: 1, oil contamination; 2, primer seating depth; 3, fouled firing pin assembly; 4, no powder in cartridge case; 5, excessive head space.

You will have to pin the booby prize on yourself if you are classified under #4, but who is there among us who on some occasion hasn't found themselves in such a predicament and I, for one, early learned of the hazards of category #1 when I too generously used those handy oil pressure spray cans that made a fine mist of oil drift over everything exposed on a workbench, including some upside down primers that were exposed but not yet inserted in cases.

Several months ago, a fellow brought in to me a rifle that well qualified in category #3. He had glass bedded it and in his very generous use of the bedding compound, he had allowed enough of the glass-like material to seep into his bolt assembly and greatly restrict the travel of his firing pin. He couldn't understand why he had suddenly run into a mess of misfires from a rifle that had hitherto been performing well.

Well, Phil, I'll probably get in bad with the Cape Cod Chamber of Commerce but I'll have to admit that it is snowing on Cape Cod; however, I noticed from the news reports that Georgia had quite a stretch of it and the same news is glowingly reporting the wonderful skiing conditions in New Hampshire and Vermont. After a few more sessions with Merrie and her new portable typewriter, I'll get back to the shop and some bullet making. This is just the kind of a day when such efforts can be expended with more pleasure than going out and making ruts in the driveway or on the highway.

Cordially yours,

Ernest Stuhlmueller

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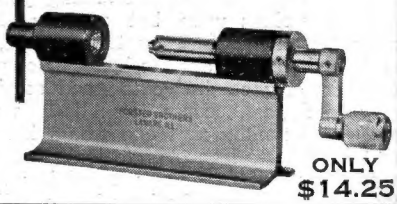

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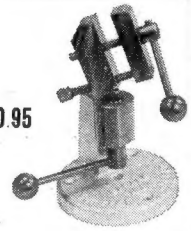

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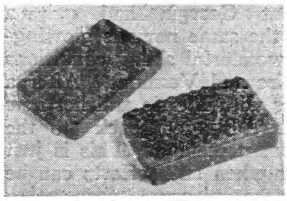

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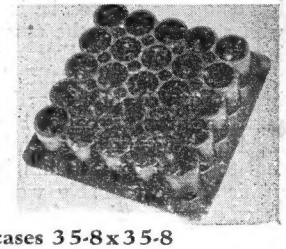

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